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ABSTRACT

This paper reviews the literature concerning integrative curricula for gifted learning. The goals of such curricula include encouraging students to incorporate innovative ideas into their learning activities, promoting self-actualization, unifying students' educational activities across subject-matter boundaries, and aiding students in organizing their knowledge and experience. Noted is the linking of integrative education to effective human functioning and self-image, independent investigation, inquiry approaches, and "whole brain" learning or "whole child" education. To translate the goals of integrative education into curricula, four models of curriculum development are discussed. The first, by Philip H. Phenix, proposes six dimensions of knowing and their corresponding cognitive abilities, and matches each qualitative dimension with a quantitative one. Katherine B. Bruch has developed a "Creative Characteristics Model" which includes physical, emotional, mental, and integrative sub-systems. The third model is J. Cecil Parker and Louis J. Rubin's "Process as Content Model" which involves organizing each subject around cognitive and operational processes. Alastair Taylor's model approaches integrative education by examining the integrative principles in human societies and suggesting hypotheses that focus on uniformities among levels of social systems. (JDD)

INTEGRATIVE CURRICULUM FOR GIFTED LEARNERS

Mildred E. Kersh

And may we not say, Adeimantus, that
the most gifted minds, when they are
ill-educated, become preeminently bad?

Plato, The Republic VI

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INTEGRATIVE CURRICULUM FOR GIFTED LEARNERS

The ability of gifted learners to seek relationships among diverse concepts in various content areas has been noted by several educators in the field of gifted education. Among the characteristics of gifted learners described by Clark (1979) are their unusual curiosity, variety of interests, early ability to delay closure, and their heightened capacity for seeing unusual and diverse relationships. Clark states that the resulting curricular implications from these several special characteristics lead directly to a form of integrative curriculum in which gifted learners are allowed, encouraged, and even required to incorporate innovative ideas into their learning activities. Lowenfeld and Brittain (1987) show that creative students possess an ability to integrate experiences into a cohesive whole. The integration, they say, can be seen in the harmonious organization and expression of thoughts and feelings that creative students employ in artistic production. Lowenfeld and Brittain also caution us not to consider integration as a forced marriage among subject areas; they cite teachers who feel (erroneously) that if students illustrate historical events, an integration between art and history takes place.

Shallcross and Sisk (1982) focus their concerns with integrative education on the integration of self, linking the process to effective human functioning and self-image. Their theoretical base for integration of self is Maslow's (1969) hierarchy of six basic needs: physiological, safety, belonging, love, self-esteem, self-actualization. Shallcross and Sisk

describe the effective person (who may be gifted) as one who is more likely to strive toward self-actualization.

A self-actualizing person has peak experiences during which the person feels more whole, more alive, more at one with the world, more self-sufficient. In other words, the self-actualized person experiences an integration of self and an integration of experiences into a meaningful whole. Thus, curriculum that enhances and promotes progress toward self-actualization might, simultaneously, promote integration. Or, vice versa, integrative education may, as a side effect, promote self-actualization.

Renzulli's (1977) Enrichment Triad Model accommodates the ability of gifted learners to undertake intense independent investigations and to satisfy their unusual curiosities. Although the Triad Model does not deal specifically with integrative education, the Type III Enrichment activities involve investigation of real problems. In these Type III inquiries, gifted learners are expected to integrate traditional curriculum areas, to use creative learning processes, and subsequently to experience a greater desire for learning. Independent investigations similar to these Type III have also been advocated for gifted learners to promote self-directed instruction.

Prompted also by gifted learners' motivation to learn on their own and to satisfy their curiosity, curricula promoting inquiry approaches and independent learning have been developed (Treffinger, 1975; Buchholz, 1985). Inquiry teaching emphasizes three hierarchial levels of knowledge:

specific data obtained from direct personal observation, concepts that represent sets or categories of data, and generalizations that integrate relations between and among concepts. Skills involved in systematic independent study are goal setting, time management, decision making, and evaluation of accomplishments. Skills required for both inquiry and independent learning are valuable for all life-long learners, especially with the information explosion facing future learners.

Integrative education is a phrase currently associated with two other movements in education: "whole brain" learning and "whole child" education. In the case of whole brain teaching and learning, integration refers to the ability to make symbolic internal transfers between left and right brain (Cook & Haipt, 1986; McKim, 1980). In relation to education of the whole child, Hendrick (1984) identifies the five aspects of the child's self as the physical, emotional, social, creative, and cognitive. It is the function of education to care for the whole child and help that child flourish. A curriculum that best promotes this function must integrate the child's five selves.

We have seen that educators of the gifted have endorsed integrative education as a viable model for differentiating curricula for gifted learners despite the varying interpretations of what the nature of integrative education might be. Following is a statement of the goals of integrative education and a survey of foundations that might be used to build integrative curricula: The goals of integrative curricula are: (a) to unify a student's educational activities across subject-matter

boundaries, and (b) to focus the direction of teaching on the integrative process in which students must engage if they are to organize their knowledge and experience. Integrative education should serve to bring together the parts and pieces of one's life into an integrated whole (Dressel, 1958).

A well designed integrative curriculum exposes students to related patterns of experience, leading them toward a more sophisticated, comprehensive view of the world. Development of such curriculum involves more than merely putting a variety of seemingly unrelated activities together or having one subject serve as the tool of another. It requires knowledge of general curricular components, knowledge of integrative curricular components, an ability to view issues in a wholistic fashion, and specific training in procedures that facilitate the synthesizing of these elements into appropriate curricula. In a society so increasingly technical and specialized we feel a need for a cohesive force in school curricula. Our knowledge is expanding and changing; experiences do not come in neat compartments called subject disciplines. What are facts to day will be untrue in a decade. We must continually examine what knowledge is most worth having.

If we accept integrative education as a goal for gifted learners, how might the goal be translated into curricula? Four avenues of curriculum development show promise as a basis for integrative education for the gifted. The first two proposals from Phenix (1982) and Bruch (1986) have been designed specifically for gifted and talented learners. The third, a

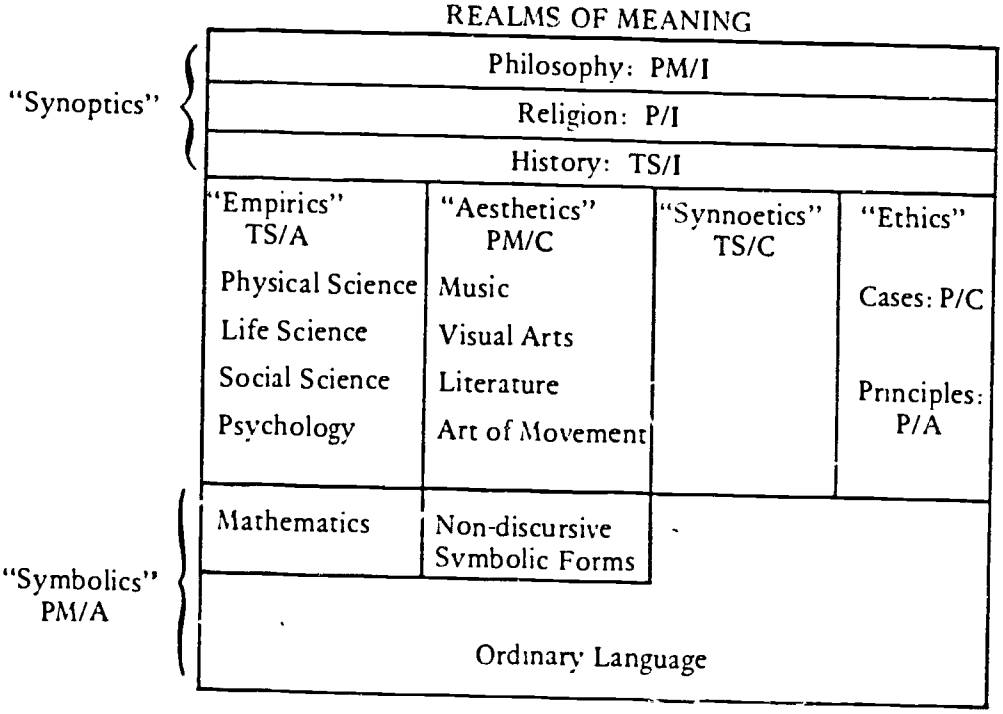
process approach, has been used successfully with gifted learners and others. The final, a social organization systems approach, is still at an abstract level, but arising as it does from the Center for Integrative Education, it could constitute a new set of universal principles for integrative curricula.

Phenix (1982) has adapted ideas from Realms of Meaning: A Philosophy of the Curriculum for General Education for use with gifted learners. Phenix states that all knowing makes use of six dimensions concerning the meaning of knowledge and criteria for truth. These six dimensions, he maintains, are significant for developing an integrated approach to teaching and learning. He proposes that the six views or dimensions of knowing and the corresponding cognitive abilities are:

Dimension of Knowledge	Cognitive Ability	
Rationalism	Pattern Making (PM)	
Empiricism	Truth Seeking (TS)	Qualitative Dimension
Pragmatism	Prizing (P)	
Intuitionism	Concentrating (C)	
Conventionalism	Abstracting (A)	Quantitative Dimension
Transcendentalism	Integrating (I)	

Phenix then matches each qualitative dimension with the quantitative, yielding nine discipline areas. For example, Pattern Making (Qualitative) is mapped onto each of the three modes of Quantitative. In turn, these nine areas, now termed "disciplines," are charted in Figure 1.

Figure 1
Phenix's Realms of Meaning Model



This analysis of what it means to know can assist the educator to understand curriculum content and to establish priorities for organizing instruction. From this analysis, Phenix proposes synnoetics as the foundation of all knowing, to be followed by ethics and aesthetics. Curriculum for the gifted would, then, be based on personal knowledge--on forms created by the imagination and tested through observation and experiment to determine how well these forms fit the objective external world. The curriculum would rest on gifted learners knowing unique objects in a direct

existential manner. The learners would then progress to ethics, the study of logic and truth in particular situations as well as in abstract principles. Next, or perhaps simultaneously (Phenix does not sequence ethics and aesthetics), students would encounter aesthetics, including the several arts--music, visual arts, literature, movement. Here the students study unique patterns of significant form. Phenix's proposal for gifted learners retains the disciplines as one way of organizing experience since, he states, they have proved fruitful in the past.

Using a different discipline approach, Bruch (1986) proposes a model for curricula to be used with creative learners. Her Creative Characteristics Model (ABC) is a system for fostering creativity in students based on principles from Genesa, a general systems theory model to provide holistic portrayals of qualities of creative persons. The Genesa systems involve physical, affective, cognitive, and integrative sub-systems. The integrative level involves products including problem solutions and transcendental breakthroughs. Bruch suggests that when other model components are accessible to the learner, there may be enhanced readiness for integration. Thematic curriculum units to implement the Creative Characteristics Model (ABC) may be fitted into regular curriculum disciplines (see Figure 2). Learning experiences suggested by Bruch include futures problem solving, simulations and gaming, global education, and imagery exercises.

Figure 2
Bruch's Creative Characteristics Model

GENESA SYSTEM	A SENSORY AWARENESS	B BODY AWARENESS	C CONSCIOUSNESS AWARENESS
Physical	Aesthetic sensitivity Sensory imagery Appreciation of nature	Free energy through body movement Physical relaxation/awareness Biofeedback awareness	Access to meditative states Focus on internal state Dream awareness & recall
	INDEPENDENCE	SENSITIVE BEHAVIORS	EMOTIONAL RESONANCE
Emotional	Assertive Constructive non-conformity Sense of creative destiny	Playful Spontaneous Warm/empathic	Shared emotions/resonance Awareness of subtle energy Super rapport; super empathy
	COGNITIVE OPENNESS	COMPLEXITY-WHOLISM	"UNITIVE KNOWING"
Mental	Sensitivity to problems Calculated risk taking Tolerance for ambiguity & disorder	Preference for complexity Integrated thought Wholistic or global perspective	Immediate knowledge Gestalt Intuitive creative illumination Creation of an original, complex system
	— READINESS FOR PRODUCTION THROUGH —		
Integrative	Cognitive problem solving creativity	Gestalt syntheses/patterns, or transforming integrations	Original "breakthrough" contributions or transcendent reintegrations

Parker and Rubin's (1966) proposal is to center curriculum around process as the integrating mechanism. While retaining the distinct disciplines, the Process as Content Model involves organizing each subject around cognitive and operational processes. Where process is stressed greater importance is attached to the methods of knowledge acquisition and utilization. Many of the critical thinking, reasoning, problem-solving curricula prevalent in today's school courses are rooted in the process as content tradition.

Lists of processes needed within specific disciplines, as well as processes that are content or discipline-free, are readily available. Scandura (1971), for example, has identified the following six basic process skills in mathematics:

1. Discovery--The Ability to Detect Regularities
   Example: patterns, number series, functions, relations
   Observe: reflections, tesselations, lines and regions problem

2. Particularization--The Ability to Construct Examples
   Example: bases other than ten, new sequences of numbers
   Observe: life or transformation's games, networks

3. The Ability to Interpret Mathematical Descriptions
   Example: reading mathematics
   Observe: multiplication maps, Euler's theorem

4. Ability to Describe Mathematical Ideas
   Example: permutations, topological equivalence, graphs
   Observe: sprouts, hieroglyphics

5. Ability to Make Logical Inferences
   Example: deduction, proof
   Observe: symmetry

6. Ability to Axiomatize
   Example: observing properties
   Observe: symmetry

7. Heuristics and Combining Process Abilities
   Example: translation, particularizing, simplifying, miniaturizing, reversing
   Observe: problem solving

Even a cursory examination of the list reveals that by deleting "mathematics," the skills are equally valid in describing the process in language, music, or art.

The use of the cognitive and affective taxonomies (Bloom, 1956; Krathwohl, 1964) as skills basic to any subject area is commonly accepted. Other less-known skill lists include Wiant's (1977) list of transferable skills and Kuwula and Smith's (1975) generic skills list.

Alastair Taylor (1972) approaches integrative education by examining the integrative principles in human societies. He contends that the basic postulates upon which the traditional disciplines function have already become conceptually outmoded to meet future requirements. He states that forced integration of largely irrelevant concepts in the name of interdisciplinary linkages may be counter-productive because it may result in strengthening the existing edifice and thus inhibit the emergence of new conceptual models.

Taylor maintains that the social sciences are hampered by a "Ptolemaic world view"; that is, a view of society divided into compartmentalized disciplines and teacher-student relationships tending to unidirectional action rather than multi-relational transactions. He calls for construction of a new model for organizing education and urges acceptance of an

integrative model as a corpus of universal principles, coupled with an appropriate innovative pedagogy. Taylor proposes a set of hypotheses that focus on uniformities found among levels of social systems. The uniformities among integrative levels Taylor proposes are:

1. The structure of integrative levels rests on a physical foundation.

2. Each level organizes the level below it, plus one or more qualities. Integrative levels are cumulative upwards and the emergence of qualities marks the degree of complexity of the conditions prevailing at a given level.

3. The mechanism of an organization is found at the level below, its purpose at the level above.

4. Explanation of phenomena is continuous from below, discontinuous from above.

5. The higher the level, the greater variety of characteristics, but the smaller its population.

6. The higher level cannot be reduced to the lower level.

7. An organization at any level is a distortion of the level below.

8. A disturbance introduced into an organization at any level reverberates at all the levels it covers.

9. Every organization has some sensitivity and responds in kind.

Two avenues seem evident to developing curricula aligned with Taylor's integrative levels. The first is to identify themes that are legitimate focuses of study in every discipline, but that transcend the disciplines. For example, each major field of study is concerned with change and unity, with some ordering principle, and with complexity coexisting with simplicity. Many disciplines even use the same vocabulary to describe similar concepts. It is these similarities that can be the themes for integrative curricula. Such themes as symmetry, transformations, mapping, constraints and variations, patterns, and point of view meet such criteria. Kersh (1976) and Kersh and Hovis (1978) have proposed such curricula and used them successfully with gifted learners. The process of developing a theme for integrative education is one of finding commonalities, seeing analogies, and using similar operations.

In a different direction from major theme identification and subsequent integrative curriculum development, one might identify existing materials that meet the criteria of using major ideas and themes that transcend the disciplines. Kersh, Nielson, and Subotnik (1986) have developed a set of procedures for identifying such materials and for adapting them to promote integrative education. They illustrated such materials for the gifted based on the Phillips Petroleum tape series, Search for Solutions.

It might be that the gifted study two or three identified integrative themes one year, with subsequent year's study of those same themes probing ever deeper into understanding the theme. This spiraling of curriculum, together with the extreme complexity of understanding all possible inter-

relationships across disciplines, provides the needed complexity of content for gifted students. Moreover, an integrative curriculum does allow enough flexibility across subject areas and complexity levels to accommodate a wide range of ability, interests, and preferences. While all students would be studying an integrative theme--say symmetry, those interested in the sciences could focus more attention on the selected theme in that area and language students could focus on language transformations.

Integrative approaches such as the above increase the students' opportunities to explore the interrelationships or realities and abstract systems. Whatever the field of study, it should be recognized that the most abstract systems (symbolic systems) are human-made, arbitrary, and subject to change. This view enhances the dynamic quality of growth in knowledge whether one is concerned with artistic endeavors, spatial relationships, language, or social institutions.

What benefits might gifted learners expect from curricula designed to maximize integrated learning? First, many of the materials designed for gifted may be exciting and motivating, but they are quite fragmented. The materials, in general, lack continuity and sequence or have a narrow, abstract approach to content. The very nature of integration alleviates the fragmented, disjointed curriculum as well as the fourth difficulty detailed--finding multiple embodiments of concepts. Moreover, since integration provides continuity across disciplines, there is more assurance that discrete one-hour lessons or weekly-only class meetings will be perceived by the student as an on-going study in which discrete activities

coalesce around a central theme. Problems of continuity through years of school experience and sequencing of activities remain as yet unsolved by integrative education. Perhaps as more integrative curricula for the gifted are developed, sequence principles will emerge. Integrative education might also more adequately accommodate the wide range of ability, interests, and preferences of gifted learners.

Integrative curricula might also overcome the difficulty that teachers of gifted report in finding concepts on the forefront of knowledge that can be dealt with by a gifted student with limited knowledge in a field. This is particularly a problem for elementary gifted students. Gifted eleven- and twelve-year-olds are limited in content knowledge, but many curriculum activities designed for them require them to act as professionals in the field. Problems of today are complex and cannot usually be solved within the confines of separate disciplines. The leading edge of knowledge is increasingly found in interrelated areas as bio- or physical chemistry, historical anthropology, nuclear medicine, and ecological architecture. Integrative education focuses the gifted student's attention on just such interrelated knowledge.

The question arises that if the teacher or curriculum developer provides the integration theme, what is the probability that this structure, this specific integration, will be the same for the students? An externally developed scheme of integration cannot be imposed, but it can motivate individuals to develop their own unique integrative structure. While such integrative structure cannot be forced, it can be encouraged by focusing

attention to the integrative scheme in all phases and in all stages of the educational process. As the teacher and the curriculum strive to unify experiences, the probability will increase that students will attempt to model the teacher in integrating their experiences.

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